



Test Report Of ANSI/IES LM-79-19

APPROVED METHOD FOR OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

Report Number..... : N02A22110665L00601

Client..... : HK Lighting Group

Address..... : 2151 Anchor Ct, Thousand Oaks, CA, USA

Test Model..... : ZXL38i-W

Brand Name..... : HK Lighting Group

Testing Laboratory.... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Testing Location..... : As above

Date of receipt..... : Nov. 24, 2022

Date of test : Dec. 08, 2022

Date of report..... : Dec. 24, 2022

Tested by:

Jarvis Zhang

Jarvis Zhang/ Test Engineer

Checked by:

Sandy Chen

Sandy Chen/ Project Engineer

Approved by:

Jessie Li

Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1. Product Description for Equipment under Test(EUT)

Representative (Tested) Model:	ZXL38i-W
Manufacturer:	HK Lighting Group
Product Type:	AREA ACCENT LIGHT
Rated Voltage/Frequency:	120V AC, 60Hz
Rated Power:	52W
Rated luminous flux:	4300lm
Nominal CCT:	3000K
LED Manufacturer:	NICHIA
LED Model No.:	NICHIA 130

2. Standards Used

- ANSI/IES LM-79-19:APPROVED METHOD:OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

3. Test equipment list

Test Equipment	Serial No.	Model No.	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	2023/09/17
Digital Power Meter	MD-E001	PF2010	2023/09/17
AC Testing Power Source	MD-E002	DPS1060	2023/09/17
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2023/10/13

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).

4. Test Method

Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ during measurement. And relative humidity between 10% and 65%.

Goniophotometer System

The sample was tested according to the ANSI/IES LM-79-19.

Photometric paramters were measured using a type C goniophotometer and software. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the Largest dimension of the test SSL product.

5. Goniophotometer Test results

5.1 Test Data

Test Ambient Temperature	25.2°C	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	30

Electrical Measurement

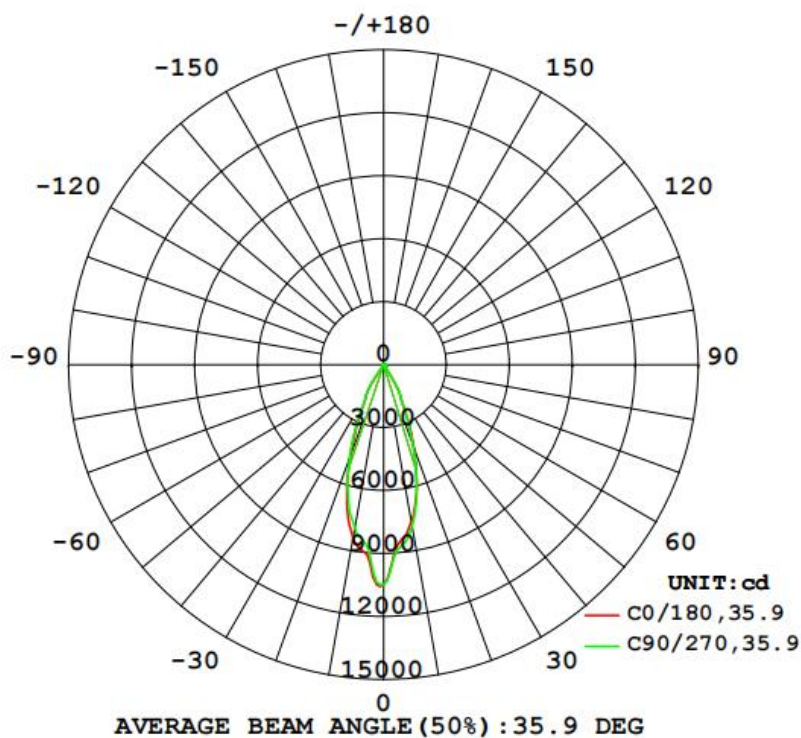
Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
120.1	60	0.4279	0.9827	50.51

Optical Measurement

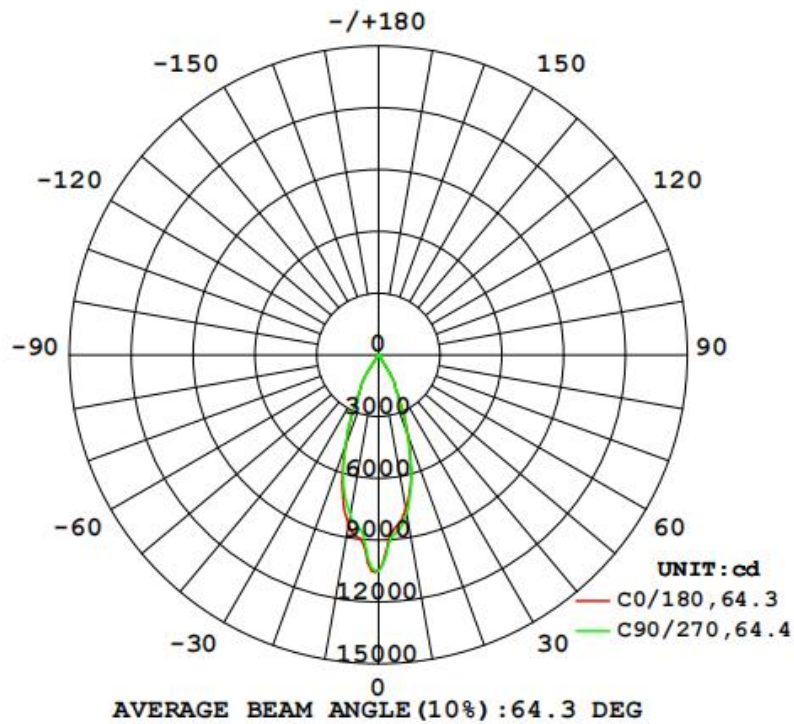
Luminous Flux (lm)	Efficacy(lm/W)	I _{max} (cd)	Spacing Criteria (C0/180°)	Spacing Criteria (C90/270°)
4297.06	85.08	10667	0.61	0.61

5.2 Luminous Intensity Distribution

5.2.1 Beam Angle (50%) Mode:



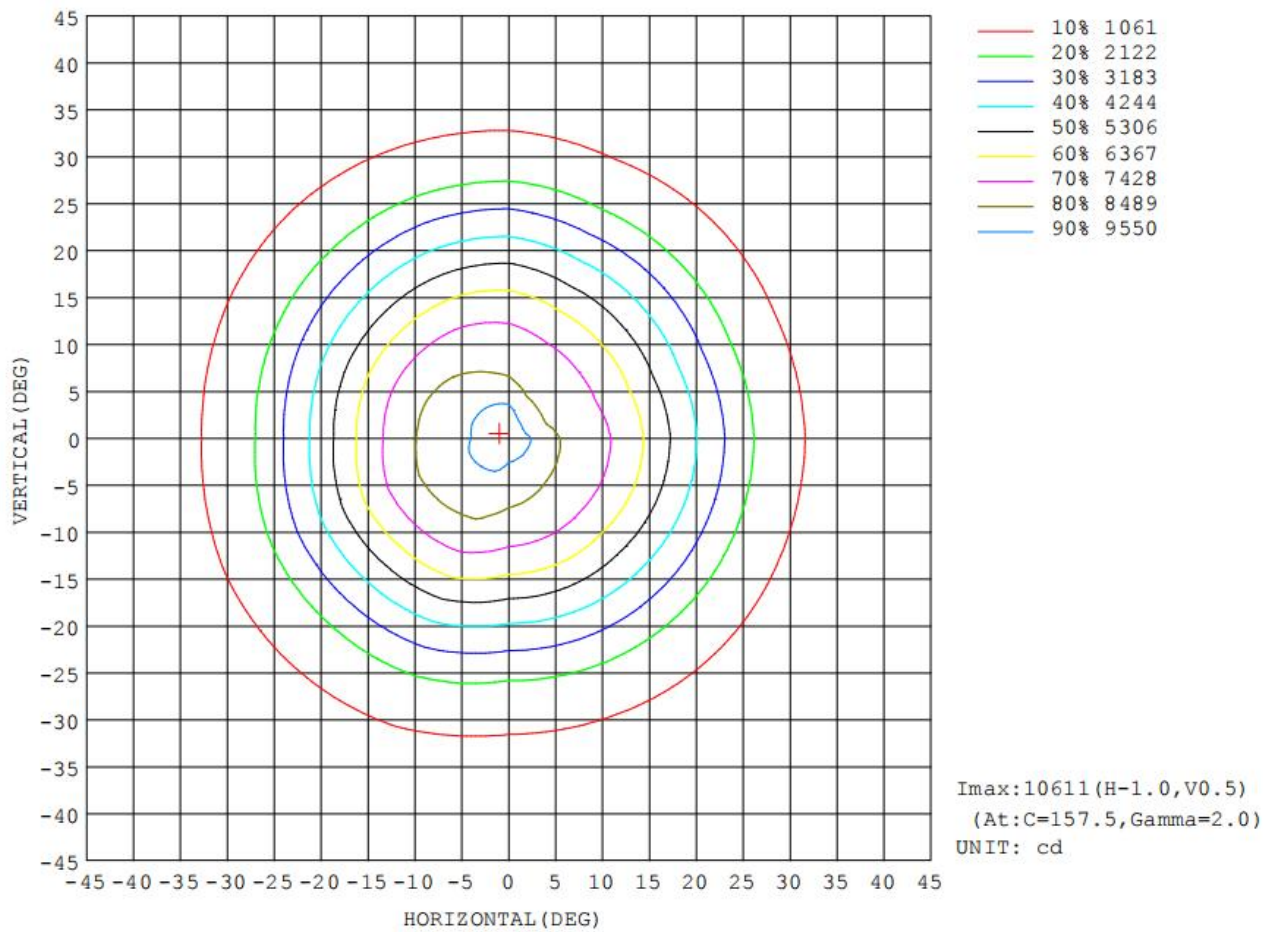
5.2.2 Beam Angle (10%) Mode:



5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	759.0	760.7	782.9	853.5	840.6	823.4	793.6	754.9	0- 10	827.3	827.3	19.3, 19.3
20	425.6	412.1	412.6	482.1	471.0	477.7	476.5	423.0	10- 20	1754	2581	60.1, 60.1
30	152.7	149.9	154.1	174.9	172.3	170.7	168.4	148.8	20- 30	1249	3831	89.1, 89.1
40	10.21	10.55	10.42	9.929	10.23	10.36	9.905	10.21	30- 40	320.3	4151	96.6, 96.6
50	7.152	7.124	7.105	8.046	7.825	8.022	7.831	7.029	40- 50	72.63	4224	98.3, 98.3
60	2.182	2.251	2.229	2.400	2.328	2.538	2.437	2.132	50- 60	39.37	4263	99.2, 99.2
70	1.315	1.391	1.392	1.398	1.374	1.396	1.310	1.271	60- 70	17.13	4280	99.6, 99.6
80	0.2295	0.1589	0.1603	0.4767	0.4375	0.5487	0.5170	0.2192	70- 80	9.885	4290	99.8, 99.8
90	0.0031	0.0031	0.0032	0.0033	0.0039	0.0085	0.0085	0.0036	80- 90	1.087	4291	99.9, 99.9
100	0.0032	0.0031	0.0031	0.0029	0.0044	0.0044	0.0043	0.0043	90-100	0.0391	4291	99.9, 99.9
110	0.0034	0.0034	0.0036	0.0031	0.0048	0.0048	0.0049	0.0048	100-110	0.0411	4291	99.9, 99.9
120	0.0094	0.0096	0.0097	0.0071	0.0081	0.0078	0.0079	0.0098	110-120	0.0515	4291	99.9, 99.9
130	0.0466	0.0477	0.0467	0.0400	0.0540	0.0516	0.0508	0.0656	120-130	0.2138	4291	99.9, 99.9
140	0.1407	0.1351	0.1282	0.1261	0.2246	0.2066	0.1816	0.2406	130-140	0.8083	4292	99.9, 99.9
150	0.2269	0.2106	0.1848	0.2203	0.4586	0.4272	0.3472	0.4417	140-150	1.542	4294	99.9, 99.9
160	0.3084	0.2836	0.2556	0.3075	0.6081	0.5996	0.5044	0.5431	150-160	1.734	4295	100, 100
170	0.3117	0.2832	0.2935	0.3324	0.5748	0.5705	0.5194	0.5218	160-170	1.229	4297	100, 100
180	0.4053	0.3904	0.4026	0.4114	0.4046	0.3871	0.3971	0.4067	170-180	0.3878	4297	100, 100
DEG	LUMINOUS INTENSITY: X10cd									UNIT: lm		

5.4 Isocandela Diagram



5.5 Luminous Distribution Intensity Data

Table--1

UNIT: X10cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	1048	1048	1048	1048	1048	1048	1048	1048	1048	1048	1048	1048	1048	1048	1048	1048			
5	852	854	859	865	875	906	924	941	912	911	904	891	876	846	845	847			
10	759	760	761	772	783	833	853	870	841	837	823	810	794	761	755	754			
15	613	611	604	611	616	675	692	713	680	683	674	669	658	623	610	606			
20	426	420	412	413	413	468	482	502	471	480	478	481	477	436	423	414			
25	249	244	239	239	238	282	292	306	282	290	292	299	296	255	245	236			
30	153	150	150	152	154	171	175	180	172	173	171	171	168	155	149	143			
35	14.0	12.2	13.0	13.3	13.1	30.5	35.9	45.4	41.0	42.4	50.7	41.8	42.4	14.1	13.1	13.0			
40	10.2	10.3	10.6	10.6	10.4	10.6	9.93	10.3	10.2	10.7	10.4	10.2	9.91	10.4	10.2	10.4			
45	9.34	9.71	9.63	9.63	9.55	10.1	9.82	9.95	9.76	10.0	9.71	9.60	9.35	9.40	9.20	9.32			
50	7.15	7.18	7.12	7.07	7.10	8.03	8.05	8.26	7.82	8.16	8.02	7.98	7.83	7.25	7.03	6.96			
55	3.74	3.68	3.70	3.64	3.68	4.44	4.36	4.66	4.37	4.67	4.60	4.56	4.41	3.87	3.72	3.59			
60	2.18	2.24	2.25	2.21	2.23	2.47	2.40	2.47	2.33	2.58	2.54	2.50	2.44	2.21	2.13	2.11			
65	1.60	1.69	1.68	1.67	1.67	1.82	1.76	1.74	1.67	1.76	1.75	1.68	1.66	1.58	1.54	1.56			
70	1.31	1.36	1.39	1.39	1.39	1.48	1.40	1.41	1.37	1.44	1.40	1.35	1.31	1.30	1.27	1.30			
75	0.92	0.95	0.96	0.96	0.94	1.11	1.00	1.04	0.97	1.04	1.01	0.98	0.94	0.90	0.86	0.89			
80	0.23	0.21	0.16	0.19	0.16	0.46	0.48	0.54	0.44	0.53	0.55	0.56	0.52	0.31	0.22	0.20			
85	0.07	0.07	0.06	0.07	0.06	0.09	0.08	0.10	0.08	0.10	0.09	0.11	0.09	0.09	0.07	0.07			
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00			
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01			
120	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01			
125	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03			
130	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.07			
135	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.12	0.12	0.11	0.11	0.11	0.13	0.14	0.15			
140	0.14	0.14	0.14	0.13	0.13	0.12	0.13	0.13	0.22	0.22	0.21	0.19	0.18	0.21	0.24	0.26			
145	0.19	0.19	0.18	0.16	0.16	0.17	0.18	0.18	0.35	0.33	0.32	0.29	0.27	0.30	0.35	0.38			
150	0.23	0.23	0.21	0.18	0.18	0.20	0.22	0.22	0.46	0.45	0.43	0.39	0.35	0.38	0.44	0.49			
155	0.28	0.27	0.25	0.23	0.21	0.25	0.27	0.28	0.55	0.54	0.53	0.49	0.43	0.43	0.51	0.57			
160	0.31	0.30	0.28	0.26	0.26	0.28	0.31	0.32	0.61	0.61	0.60	0.55	0.50	0.50	0.54	0.60			
165	0.32	0.31	0.30	0.28	0.28	0.31	0.33	0.33	0.61	0.61	0.60	0.56	0.52	0.51	0.53	0.58			
170	0.31	0.30	0.28	0.28	0.29	0.32	0.33	0.33	0.57	0.58	0.57	0.55	0.52	0.50	0.52	0.54			
175	0.32	0.32	0.31	0.31	0.32	0.32	0.33	0.32	0.49	0.49	0.49	0.47	0.47	0.46	0.46	0.47			
180	0.41	0.39	0.39	0.41	0.40	0.41	0.41	0.39	0.40	0.41	0.39	0.39	0.40	0.39	0.41	0.41			

6. Photo of sample

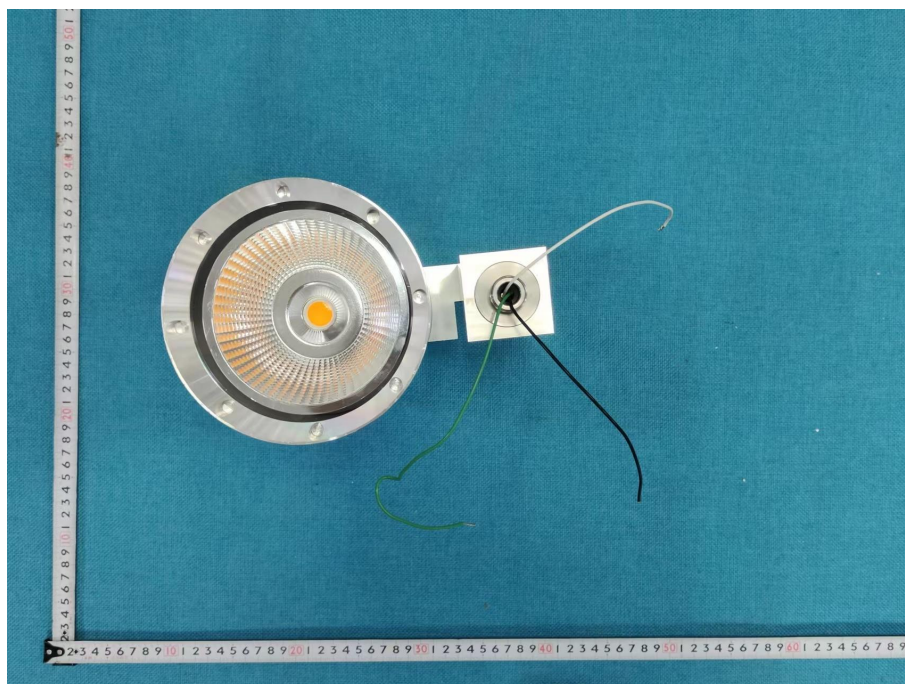


Figure 1 Overview

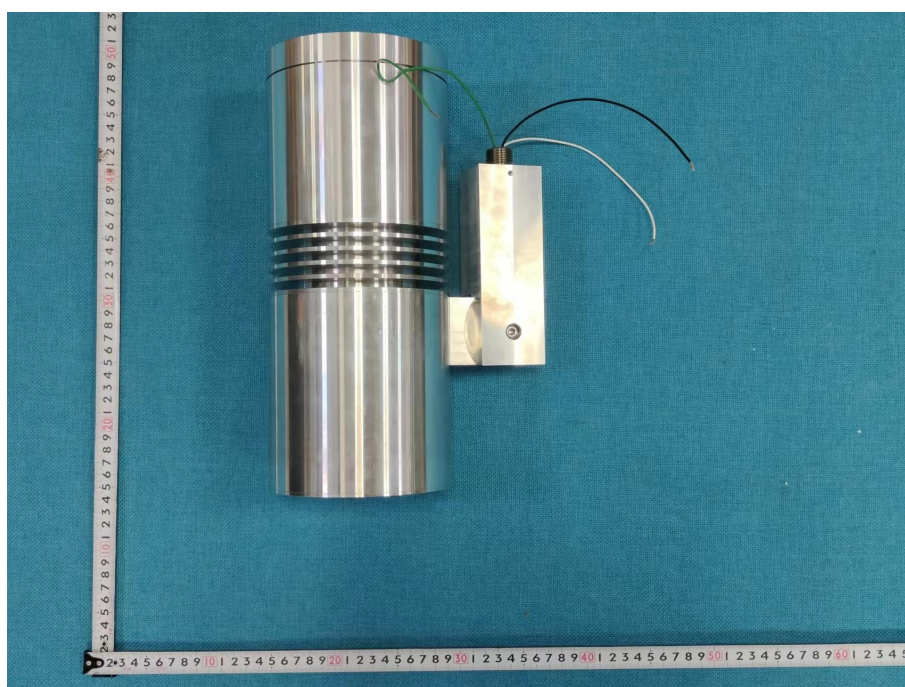


Figure 2 Overview

---End of Report---